# Acute myocardial infarction due to an acute type A aortic dissection involving the left main coronary artery

E.S. Zegers, H.R. Gehlmann, F.W.A. Verheugt

**We report a case of anterior myocardial infarction due to a Stanford type A aortic dissection involving the left main trunk of the coronary artery. Acute myocardial infarction due to extension of an acute Stanford type A aortic dissection is an infrequent but devastating situation. In our case a spontaneous aortocoronary dissection involving the Valsalva sinus and the ascending aorta with a history of hypertension is the most plausible cause. Emergent aortic replacement and revascularisation was performed. (*Neth Heart J* 2007;15:263-4.)**

Keywords: aorta, dissection, myocardial infarction, coronary artery (left main)

A 54-year-old man with a history of a cerebrovascular accident treated by clipping of a cerebral aneurysm in 1993 and hypertension was referred to our hospital with a sudden onset of severe chest pain which started while he was dancing one hour earlier. The prehospital ECG showed extensive ST-segment elevation in the anterior and lateral leads suggesting acute anterior myocardial infarction (figure 1). The patient's haemodynamic status deteriorated acutely and bradycardia developed.

On admission he was in cardiogenic shock. Physical examination revealed no murmurs.

Emergent coronary angiography demonstrated an aortic dissection located at the sinus of Valsalva and ascending aorta. The false lumen originated from the sinus of Valsalva and involved the left main coronary artery. Subtotal occlusion of the left main coronary artery with TIMI 1 flow was seen (figure 2).

The patient was transferred for emergency surgery, during which transoesophageal echocardiography (TEE) was performed. TEE confirmed the diagnosis of aortic dissection but did not reveal aortic regurgitation or pericardial effusion. The entry of the dissection was 2 cm above the commissure of the aortic valve and extended to half way along the ascending aorta. The ascending aorta was replaced. Myocardial revascularisation of the anterior descending coronary artery with the left internal mammary artery was carried out. Saphenous vein bypass grafting from the ascending aorta to the anterolateral coronary artery, obtuse marginal artery and ramus posterior descendens was performed. Postoperatively, an intra-aortic balloon pump was inserted because of haemodynamic instability due to the left ventricular myocardial injury. Serum creatine kinase levels were 7600 U/l and troponin I >180 µg/l. The patient died in the postoperative period due to respiratory failure and left ventricular dysfunction.

## Discussion

Acute myocardial infarction due to extension of an acute Stanford type A aortic dissection is an infrequent but devastating situation. Several case reports of a Stanford type A aortic dissection in combination with a myocardial infarction have been published.[1-7] In almost all cases the right coronary artery was involved.[1-3] We report a case of anterior myocardial infarction due to a Stanford type A aortic dissection involving the left main trunk of the coronary artery.

Coronary artery occlusion may occur because of mural dissection or be secondary to extravasation of blood into pericardial and perivascular tissues.[8] The aetiology of this life-threatening situation is an iatrogenic dissection involving the sinus of Valsalva and the ascending aorta by forceful manipulation of the guide catheter.[9,10] Another cause may be a spontaneous aortocoronary dissection involving the sinus of Valsalva and the ascending aorta or a retrograde propagation

**E.S. Zegers**
**H.R. Gehlmann**
**F.W.A. Verheugt**
*Department of Cardiology, Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands*

Correspondence to: E.S. Zegers
Department of Cardiology, Radboud University Nijmegen Medical Centre, PO Box 9101,
6500 HB Nijmegen, the Netherlands
E-mail: e.zegers@cardio.umcn.nl

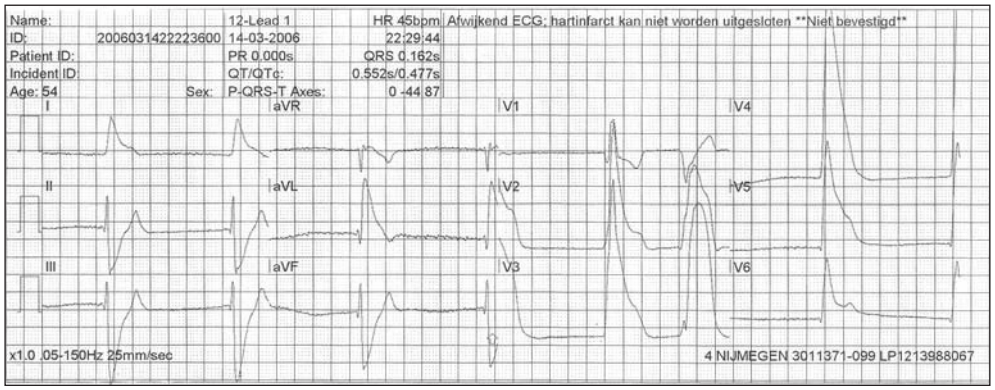


*Figure 1. The prehospital ECG showed extensive ST-segment elevation in the anterior and lateral leads suggesting acute anterior myocardial infarction.*

of a spontaneous dissection of the left coronary artery to the sinus of Valsalva.

In our case a spontaneous aortocoronary dissection involving the Valsalva sinus and the ascending aorta associated with a history of hypertension is the most plausible cause. The dissection was already seen when contrast was flushed with the guide catheter into the distal part of the ascending aorta. Perioperative inspection of the dissection revealed an intimal tear entry in the sinus of Valsalva in the ascending aorta and extending throughout the left main coronary artery.

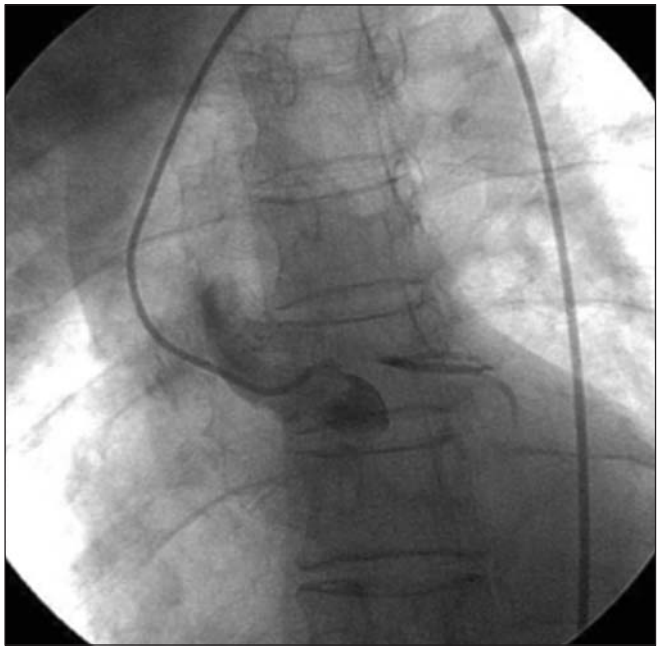

*Figure 2. Coronary angiography in anteroposterior position showed an aortic dissection located at the sinus of Valsalva and ascending aorta. The false lumen originated from the sinus of Valsalva and involved the left main coronary artery. Angiography showed subtotal occlusion of the left main coronary artery with TIMI 1 flow.*

## Conclusion

We report a case of anterior myocardial infarction due to a Stanford type A aortic dissection involving the left main trunk of the coronary artery. Acute myocardial infarction due to extension of an acute Stanford type A aortic dissection is an infrequent but devastating situation. In our case a spontaneous aortocoronary dissection involving the Valsalva sinus and the ascending aorta with a history of hypertension is the most plausible cause. ■

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